

Remarks

The drawings are objected to. Claims 1-2 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Hiramatsu et al. (US 5,168,291). Claims 3-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiramatsu et al. in view of Ito et al. (US 5,245,359). Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hiramatsu et al. in view of Ito et al., and further in view of Choo (US 5,825,381). Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hiramatsu et al. in view of Ito et al. and Choo, and further in view of Bronswijk et al. (US 6,419,342). Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hiramatsu et al. in view of Watanabe (US 6,264,303). Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiramatsu et al. in view of Ito et al. and Choo.

1. Objection to the drawings:

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "110" has been used to designate both a printer and the gap in a light source (see figure 6). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Response:

Fig. 6 has been amended to correct this error. The printer retains the reference number 110, and the reference number of light sensor has been changed to 106. This change is supported by paragraph [0036] of the specification. One marked copy and one clean

BEST AVAILABLE COPY

copy of Fig. 6 are provided to show the change made.
Acceptance of the figures is requested.

5 2. Rejection of claims 1-2 and 11 under 35 U.S.C. 102(b):

Claims 1-2 and 11 are rejected under 35 U.S.C. 102(b)
as being anticipated by Hiramatsu et al. (US 5,168,291)
for reasons of record, as recited on pages 2-3 of the
above-indicated Office action (part of paper no.3).

10

Response:

Claim 1 contains the limitation "wherein the calibration
position is within a range which the print head is capable
of printing the medium, and the second portion is capable
15 of passing by the first portion when the print head
simultaneously ejects ink onto the medium." This limitation
is supported in Fig. 2 and in paragraph [0017] of the
specification, which states "the shield 94 is installed
on the base of the housing 52 within the printing range
20 in which the print head 60 can print information onto the
paper." Since the shield 94 is located within the normal
printing range, the position of the carriage 54 can be
calibrated during a printing process.

25 On the other hand, Hiramatsu et al. (Hiramatsu
hereinafter) teaches calibrating the position of the
carriage at a location outside of the normal printing range
in Fig. 6 and Fig. 7A-7C.

30 The following is a quote from Hiramatsu Col. 7 lines
62-68:

"In the ink jet printer of the first embodiment of the present

invention, a carriage motor (CR motor) is used to move the carriage 2 with reference to the home position of the recording head 1. FIG. 6 shows the relationship between the step numbers of the carriage motor (angular position) and the operations corresponding thereto."

5

Please notice that in Fig. 6, the First Dot Position is at step 62, and additional dots will be printed to the right of step 62. However, the home position (H.P.) is not included in the printing range.

10

The following is a quote from Hiramatsu Col. 8 line 64- Col. 9 line 6:

"Further, at steps S716-S721, the feed motor is rotated forward further with reference to the home position of the recovery means while the carriage 2 is retained at the position, and a series of recovery operations is performed, which includes a forced air supply operation, a suction operation, a sucking state retaining operation and an idle suction operation. Then, at steps S722-S725, the carriage motor is rotated reversely through 21 steps to return the carriage 2 to the LF (line feed) operating position, by which the transmission path of the switchable transmission gear train 19 is switched to the intermediate feed gear 20. Then, the feed motor 21 is rotated reversely and forwardly, the adverse affect of the backlash of the gear is removed by shifting to one side. Thereafter, the recording operation is started at step S726 from the position after 88 step reverse rotation of the carriage motor."

From the above, Hiramatsu clearly teaches that the print head can eject ink onto the document only from the first dot position, which is 62-step reverse (right) rotations of the step motor from the home position (HP), or 88-step reverse rotations of the step motor from the line feed position (LF).

Therefore, when the cartridge is positioned at the home

position (HP), the cartridge is not within the range which the printhead can print the document, and the second portion can not pass by the first portion when the print head simultaneously ejects ink onto the document. For these reasons, Hiramatsu does not anticipate the present invention according to claim 1. Claims 2 and 11 are both dependent on claim 1, and should be allowed if claim 1 is allowed. Reconsideration of claims 1-2 and 11 is hereby requested.

3. Rejection of claims 3-8 under 35 U.S.C. 103(a):

Claims 3-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiramatsu et al. in view of Ito et al. (US 5,245,359) for reasons of record, as recited on pages 4-7 of the above-indicated Office action (part of paper no.3).

Response:

Claim 3 has been amended to further distinguish from Ito et al. (Ito hereinafter). The limitations of claim 4 have been merged into claim 3 to create the amended claim 3, and claim 4 has been cancelled. No new matter has been added through this amendment. In the currently amended claim 3, first and second edges of the shield respectively correspond to first and second calibration positions. The control circuitry will then calculate first and second differences based on the corresponding first and second calibration positions.

On the other hand, Ito only calculates one calibration position. The following is a quote of Ito col.5 lines 1-10:

"The carriage 5 is provided with a shield plate 27, and the arrival of the carriage 5 at a home position is detected when said shield plate 27 intercepts the light to a slit 29 of a photo sensor 28. Upon said detection, the position counter 16 of the RAM 13 is
5 initialized to "0". Then, as the carriage 6 moves to the right, in the direction F, from said initial position, the position counter 16 of the RAM 13 is stepwise increased by the signals from the aforementioned decoding circuit 20, thereby detecting the position of the carriage 6."

10

From this excerpt, it is apparent that Ito detects the home position and performs calibration only once when the shield plate intercepts the light.

15

In claim 8, a first predetermined range of position differences is defined. If the difference between the position of the second portion and the calibration position is within the first predetermined range, the control circuitry does not need to calibrate the position of the
20 carriage.

However, as the quote of Ito col.5 lines 1-10 states above, the home position is always calibrated (initialized to "0") once whenever said shield plate intercepts the light.
25 Therefore, when there exists a certain difference, the control circuitry always calibrates the position of the carriage. Hence, what Ito teaches is opposite to claim 8, which does allow a certain difference that falls within the first predetermined range to exist
30 without performing calibration.

Furthermore, claims 3 and 5-8 are all dependent on claim 1, and should be allowed if claim 1 is allowed.

Reconsideration of claims 3 and 5-8 is hereby requested.

4. Rejection of claim 9 under 35 U.S.C. 103(a):

5 Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hiramatsu et al. in view of Ito et al., and further in view of Choo (US 5,825,381) for reasons of record, as recited on pages 7-8 of the above-indicated Office action (part of paper no.3).

10 **Response:**

In claim 9, a second predetermined range of position differences is defined in addition to the first predetermined range defined in claim 8. The control circuitry will calibrate the position of the carriage after the medium is printed only if the difference between the position of the second portion and the calibration position is between the first predetermined range and the second predetermined range.

20 On the other hand, Choo does not allow for any difference in position when printing. The following is a quote of Choo col.1 lines 36-46:

25 "The recording head is typically mounted in a print cartridge within an assembly that is mounted on the carriage of the printer/plotter. Generally, full color or black and white printing or plotting requires that the carriage supporting the recording head be precisely aligned or positioned at an initial home position serving as a reference position so as to accurately begin printing information on a recording medium in each scan axis direction. Otherwise, any misalignment of the carriage will result in a misregistration of print images, particularly when the printer is a multi-color type of printer."

It is seen that Choo actually teaches away from the

pre ent invention by not allowing any position difference to exist when printing.

5 In addition, claim 9 is dependent on claim 1, and should be allowed if claim 1 is allowed. Reconsideration of claim 9 is hereby requested.

5. Rejection of claim 10 under 35 U.S.C. 103(a):

10 Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hiramatsu et al. in view of Ito et al. and Choo, and further in view of Bronswijk et al. (US 6,419,342) for reasons of record, as recited on page 8 of the above-indicated Office action (part of paper no.3).

15 **Response:**

Claim 10 is dependent on claim 1, and should be allowed if claim 1 is allowed. Reconsideration of claim 10 is hereby requested.

20 6. Rejection of claim 12 under 35 U.S.C. 103(a):

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hiramatsu et al. in view of Watanabe (US 6,264,303) for reasons of record, as recited on pages 8-9 of the above-indicated Office action (part of paper no.3).

25 **Response:**

Claim 12 is dependent on claim 1, and should be allowed if claim 1 is allowed. Reconsideration of claim 12 is hereby requested.

30 7. Rejection of claims 13-15 under 35 U.S.C. 103(a):

Claims 13-15 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Hiramatsu et al. in view of Ito et al. and Cho for reasons of record, as recited on pages 10-11 of the above-indicated Office action (part of paper no.3).

5 **Response:**

Like claim 1, claim 13 also contains the limitation "the calibration position being within a range which the print head is capable of printing the medium."

10 However, as stated above, Hiramatsu teaches calibrating the position of the carriage at a location outside of the normal printing range in Fig.6 and Fig.7A-7C. In addition, neither Ito or Cho teach a calibration position being within a range which the print head is capable of printing the
15 medium. Therefore claim 13 is not unpatentable over the combination of Hiramatsu, Ito, and Cho.

Claims 14-15 are dependent on claim 13, and should be allowed if claim 13 is allowed. Reconsideration of claims
20 13-15 is hereby requested.

25 Respectfully submitted,

Winston Hsu

Date: 6/18/2003

Winston Hsu, Patent Agent No.41,526

30 P.O. BOX 506

Merrifield, VA 22116

U.S.A.

e-mail: winstonhsu@naipo.com.tw